

CCS Deployment: Search for the Magic Feather

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The Waxman Markey Framework

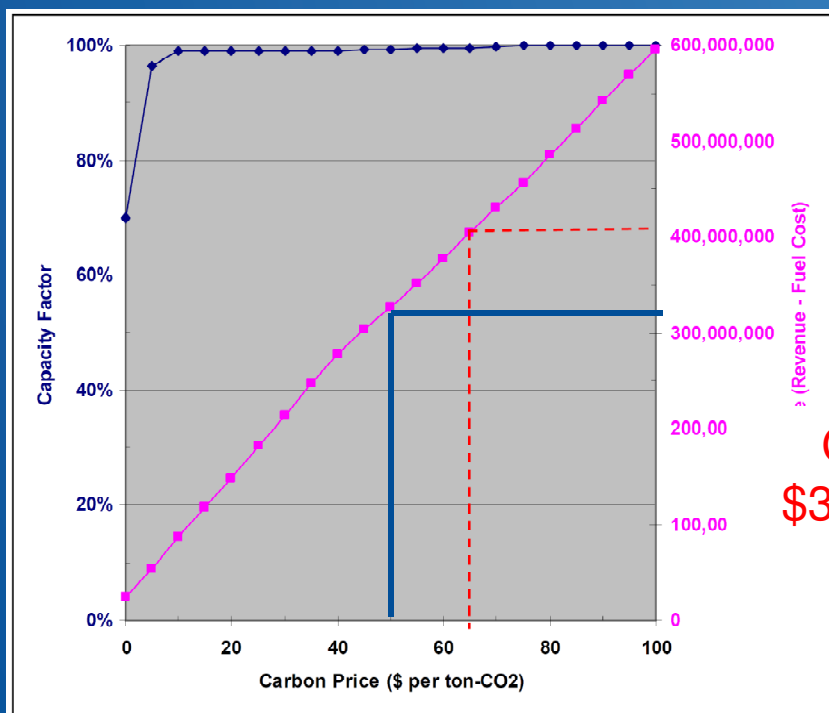
Demonstration & Early Deployment

- Carbon Storage Research Corporation
- At Least Five Commercial Scale CCS Projects
- Assessment on Distribution Utilities Based on Fossil Fuel kWhs Delivered
- Approximately \$1Billion per Year
- Public Meetings & Annual Report
- 10 Year Program

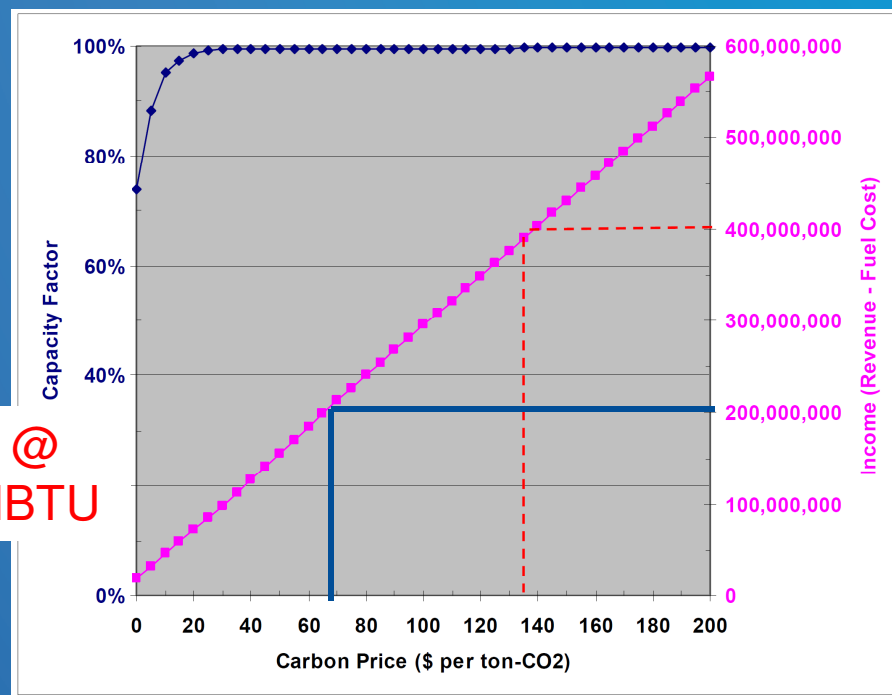
Commercial Deployment

- >200 MW & >50% Coal/PetCoke
- Phase I: 6 GWs
 - $$\frac{\text{Tons Avoided} \times \text{Bonus Allowance Value}}{\text{Avg. FMV of Prior Year Allowances}}$$
 - BAV: 50% = \$50 to 85% = \$90
- Phase II: Up to 72 GWs
 - Reverse Auction; or,
 - Allocation by Tranches for “Reasonable Incremental Capital & Operating Expenses Attributable to CCS”
- Subsidy for 10 Years of Operation

A Multi-Variable Equation



**GAS @
\$3/MMBTU**



CCS Interior West
Coal On Margin

\$6,000 /kW
11,500 BTU/kWh
55/45 Debt to Equity
6.5% Interest Rate
12% ROE
20 Year Book Life

Central California CCS
Natural Gas On Margin

Source: Shu, Economics and Policies for Carbon Capture and Sequestration in the Western United States. MIT, 2010

What Makes CCS Fly?

- A Price on Carbon
- Development & Deployment Dollars
- Public Confidence
 - Thoughtful Regulatory Framework
 - Good Geology
 - Risk Management in Private Sector
 - Public Education & Outreach